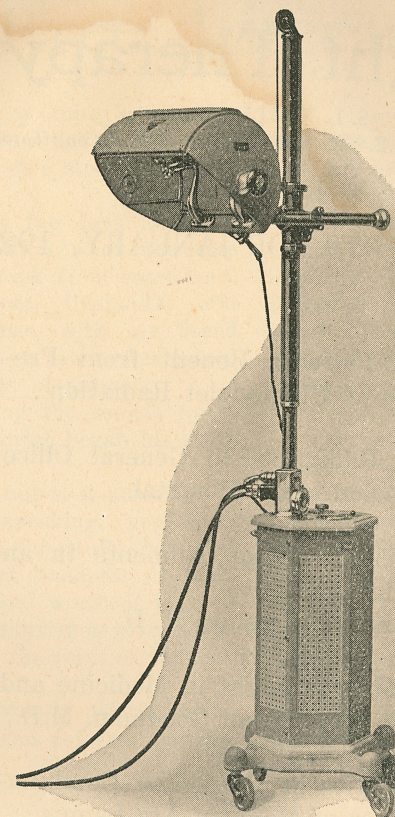


LIGHT THERAPY



BURDICK

JANUARY ~1928



No. LAW-660 for Alternating Current
No. LAW-360 for Direct Current

FAUCET TYPE MODEL

TWO MODALITIES IN ONE
BURDICK
Combination Air and Water-Cooled
Mercury Arc Lamps

Light Therapy

S. L. WILLIAMS, *Editor*
GEORGE E. CROSLY, M.D., *Special Contributor*



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PUBLISHED MONTHLY BY
THE BURDICK CORPORATION
MILTON, WISCONSIN

MR. F. F. BURDICK, President MR. L. W. BURDICK, Treasurer
MR. F. A. ANDERSON, Vice-President and Secretary

Free Literature

Once upon a time a reporter whom the editor knew well, was sent out to write a story about free lunches.

This was in the days just preceding Prohibition when the free lunch had shrunk from roast beef, bologna, cheese, liverwurst and ham sandwiches, with rye bread and pickles, to a few oyster crackers and a bowl of pretzels.

After making the rounds faithfully, the reporter began his story with this line:

"It is free, but is it lunch?"

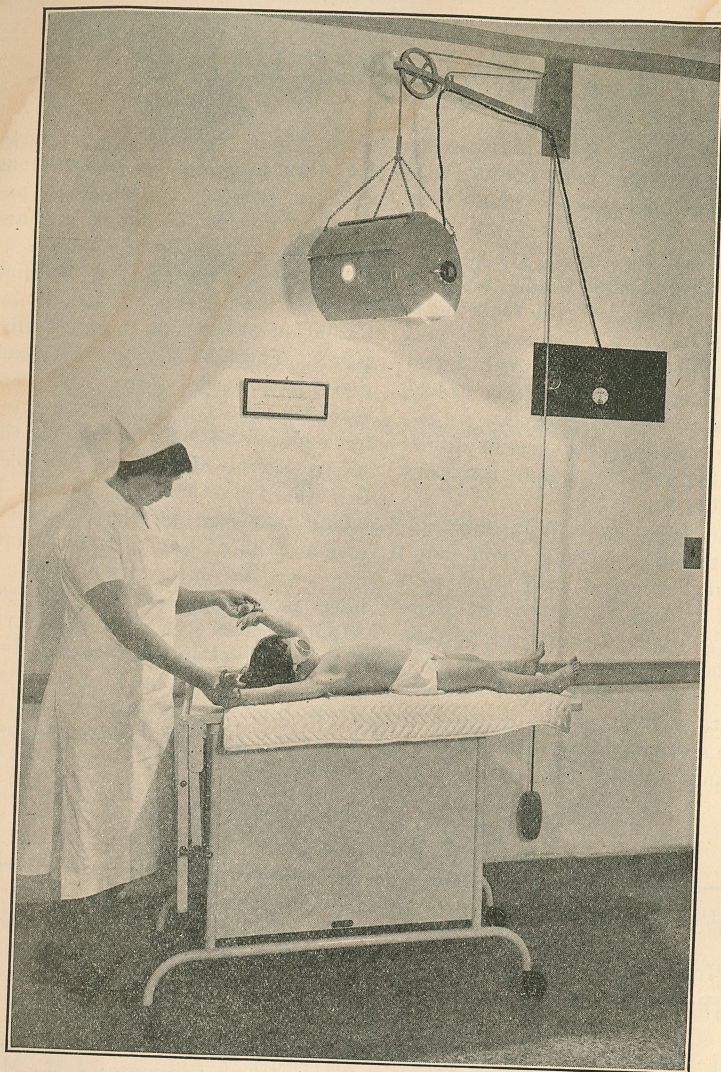
Generally speaking, you can't get much for the stuff they give away; and yet hundreds of thousands of dollars' worth of perfectly good merchandise is given away every year in the form of samples, literature, etc.

We are constantly printing booklets and bulletins for free distribu-

tion. These various things, however, are prepared by pre-eminent men, are printed on high grade paper, cost us a lot of money and are actually worth a lot of money.

Take for example, the Burdick brochure entitled, "Ultra-Violet Radiation in the Treatment of Disease." There is a booklet which gives in concrete form, the very essence of actinotherapy, written by a man who not only knows the physics involved but also has been in actual practice for years. It would take any physician months and months of constant reading to dig out the information that is here presented in forty pages. What is true of this book, is true also of our other literature. Here is a list of it. Check what you want, mail us the coupon and we will send you the literature absolutely free.

- ☐ Ultra-Violet As An Aid in Dietary Deficiencies,
By Dr. Harry Steenbock.
- ☐ Infrared Radiation with the Zoalite, by G. E. Crosley, M. D.
- ☐ Pathogenesis and Treatment of Hay Fever and Asthma,
by Solomon R. Kagan, M. D.
- ☐ Use of Physical Energies in the Treatment of Tubercular Peritonitis.
By A. David Willmoth, A.M., M.D.
- ☐ Ultra-Violet Ray Therapy in Dermatology, by John Butler, M. D.
- ☐ Ultraviolet Radiation in the Treatment of Pulmonary Tuberculosis,
By H. H. Redfield, M. D.
- ☐ The Ultraviolet Ray in Dentistry, by Frederick W. Lake, D. M. D.
- ☐ Ultraviolet Therapy in Pediatrics, by Edwin T. Wyman, M. D.



General Irradiation of a Child
with the tonic Ultra-violet Wave Lengths
in a famous Hospital in the Northwest,
Illustrating the Burdick Air-Cooled Mercury Arc Lamp.
(Wall-Bracket Type).

Special Installation by the Shaw Supply Co. of Portland, Tacoma and
Seattle, with the control cabinet built into the wall.

Light Therapy

Published to further the commercial interests of The Burdick Corporation
and the cause of Light Therapy in the world.

Volume 4

JANUARY, 1928

Number 1

Bedridden Patients Benefit From Prescription of Ultra- violet Radiation.

BY THE EDITOR

Think how many cases there are in which it is either unwise or inconvenient to move the patient, even though Ultra-violet Therapy is strongly indicated. In such cases the Prescription models of the Mercury Arc Lamps fulfill a need which becomes more and more evident as the value of the tonic Ultra-violet wave lengths continues to prove itself in ever-increasing thousands of cases.

At present the prescription of Ultra-violet radiation is quite wisely confined to treatments of considerable areas of the body with the longer wave lengths delivered by the Air-Cooled Mercury arc generator at a skin distance sufficient to create a comparatively moderate reaction. Therefore the physician's instructions are quite simple and easy to follow to the letter. Yet a prompt improvement in the general health of the patient can almost always be observed, and a corresponding alleviation of the basic pathologic condition which is being treated.

There are the numerous cases of

tuberculosis, especially of the surgical type but including carefully selected cases of the pulmonary type, which react so successfully to the rays of the Ultra-violet region. Here, of course, skillful nursing, fresh air and rest play vital parts, but Ultra-violet radiation may well be the additional factor which turns the scale in your favor. When it is not necessary to place the patient in a Sanatorium, the Prescription Unit will spare him the exertion of going outside of the home for his treatments. In patients who reveal a tendency toward pulmonary tuberculosis, or in the incipient stages of the disease, a consistent course of treatments may generally be expected to clear up the suspicious symptoms within two or three months.

In the treatment of the anemias, not so far advanced as to require removal to hospital, irradiation with the tonic Ultraviolet wave lengths has been successful in a majority of cases. The Prescrip

tion unit is a convenient modality in these cases and spares the patient from harmful and unnecessary exertion.

In Post-Operative Conditions

Post-operative conditions and convalescence after a protracted and wasting illness call for treatments in the patient's home after the return from the hospital. The vital forces of the body are depleted by the abnormal demands of the past and the recovery to normal health is often slow and arduous, and often marked by sharp relapses with serious and often fatal consequences. Here Ultra-violet radiation plays a magnificent part in hastening complete recovery.

Under the benign rays of the Burdick Prescription Unit the patient rallies vigorously and rapidly. The blood stream recovers its normal chemical constituency, the lymph flow is increased, and the endocrine action stimulated. A more rapid and uneventful recovery is assured.

Again we have the many patients who do not require hospital care yet who cannot call at the hospital or the physician's office for treatment without a great deal of unnecessary pain. I refer to those who suffer from arthritis, lumbago, or rheumatism. In many of these cases Ultra-violet in combination with the proper care and diet of the patient brings highly satisfactory results. Doubtless the reader is familiar with many cases which have greatly improved under Ultra-violet therapy. Lack of space prevents our going into detail in this article but a great many case reports are available which demonstrate that Ultra-violet is indicated in these conditions. The treatments can be given eas-

ily, conveniently, and comfortably in the patient's home with the Burdick Prescription Unit.

Your prescription will be honored by the nearest Burdick distributor, who will furnish complete instructions with regard to the mechanical operation. The physician should prescribe the proper skin distance and time of exposure, and state just what area is to be exposed. Goggles are furnished with the lamp to protect the eyes of the patient and whoever is to operate the lamp. The shutters, a new and exclusive feature of Burdick Prescription Units, protect the patient from over-exposure while the lamp is building up to the proper voltage.

The physician will, of course, follow the progress made under the treatments with care especially to note the reaction after the first and subsequent exposures, but he need not be present at every one. In the thousands of cases treated by Prescription we have yet to receive a single complaint from either the physician or the patient. The potentialities for good are manifold and obvious. The physician can make far more successful use of Ultra-violet Therapy and can do so more conveniently than ever before.

The Rental Plan

The Rental Plan makes it possible to lighten the cost of the treatment through a series of moderate monthly charges for the loan of the lamp which is returned to the distributor when the treatments are concluded. These payments may be applied toward the purchase price of the lamp if the physician desires to pay the remainder of the cost. Many doctors own three or four of these

lamps which are kept busy constantly in the service of a large practice.

The Burdick Prescription Unit is a compact and light Mercury Arc Lamp which distributes a high intensity of the longer Ultra-violet wave lengths evenly over the area treated. A telescopic upright with a vertical extension from forty to seventy-two inches permits a wide variation in "skin distance." The voltmeter and voltage regulator permit the operator to detect and correct changes in the supply voltage. Keep the voltage that operates the burner constant and the Ultra-violet intensity remains constant, so that the dosage you prescribe can be measured exactly.

SUMMARY OF EFFECTS OF TREATMENT WITH ULTRA-VIOLET RADIATION

1. Ultraviolet radiation and calcium are synergists, since both stimulate the sympathetic nervous system and act along with the catabolic endocrines.

2. Ultraviolet radiation and calcium are opposed by the parasympathetic mechanism in the normal state of reciprocal vegetative interactivity.

3. Ultraviolet radiation and calcium are indicated in all cases of low general metabolism, calcium insufficiency diseases and allergic phenomena.

4. Allergic phenomena are chiefly due to the edema which is the result of increased endothelial permeability caused by parenteral proteins, and are scientifically checked by ultraviolet radiation calcium injections, or catabolic endocrines and drugs.

5. Ultraviolet, calcium, and the catabolic synergists are contraindicated in advanced pulmonary tuberculosis, toxemias, fever, diabetes and toxic goiter.

Ultraviolet Radiation in Normal and Pathologic States.
Edwin Kime, M. D., Indianapolis, Ind.

Archives of Physical Therapy,
X-Ray, Radium, October,
1927, Pages 511-512.

TREATING ORTHOPEDIC CASES

Flat feet are often due to trauma, and the application of supports alone is never satisfactory. Heat, massage, sinusoidal electrical muscle stimulation, manipulations and exercises should be used to strengthen the muscles and ligaments thus effecting a real cure. Bursitis and tenosynovitis are generally improved with radiant heat and direct diathermy, along with the proper rest of splints and the removal of any foci of infection.

The physical-therapy department should work in close harmony with the orthopedic department, and if the department has properly trained personnel and good equipment they will receive many orthopedic cases such as infantile paralysis, obstetrical paralysis, posture cases, goor deformities and weaknesses and spinal curvatures.

Myalgia, myositis, and neuritis are often quickly relieved by radiant heat and diathermy, along with the proper medical treatment.

Planning, Placing and Equipping a Hospital Physical-Therapy Department.

John S. Coulter, M. D.
Hospital Progress, November,
1927, Page 437.

Infra-red Radiation in General Office Practice And in the Hospital

The therapeutic value of heat in medicine is axiomatic. But as is so often the case familiarity has resulted in neglect of its full potentialities. Recent research work has demonstrated that a great many hitherto unsuspected reactions may be induced by treatment with heat of the conversive type. Converse heat differs from heat in the ordinary sense in that it is not transmitted directly to the surface of the skin but is produced in the underlying tissues through their resistance to and absorption of waves of electrical energy. This action is readily understood when one considers that the rays of the sun which pass through thousands of miles where the temperature is far below zero, nevertheless give a marked sensation of warmth upon the skin and heat the earth's atmosphere to a degree which permits life.

The rays which produce conversive heat are chiefly those that fall in the Infra-red region of the solar spectrum. The great therapeutic value of the Zoalite lies in the rich concentration of Infra-red rays which it delivers to the area treated. The heat produced in the underlying tissues as the rays are absorbed produces a marked hyperemia. The heat regulating system of the body causes an increase of blood in the skin capillaries and

gradually results in perspiration and active elimination.

Stasis is relieved in the area treated and prompt relaxation of the tissues follows. The bone marrow when heated causes increased nourishment of the blood-forming tissues. The increased supply of blood induced removes the debris consequent upon the pathologic condition.

The natural germicidal powers of the blood are demonstrably increased indirectly through the antibodies present in the fresh blood supply and directly through heating hostile organisms to a temperature which destroys them without injury to the body cells.

The local action of the Zoalite has been summarized as decongestive, analgesic, and antispasmodic, while its general action is restorative and eliminative.

Do not say that most conditions in which the Zoalite is being used by thousands of physicians can be improved eventually without this modality. Such a statement is not sound. For the Zoalite is not recommended as a specific, but as a powerful adjuvant, which brings far more prompt relief and far more rapid recovery than ordinary methods in the cases in which it is indicated.

The fact that it brings such

prompt and positive relief to the patient and hastens the process of recovery make it an almost indispensable Unit.

The use of the Zoalite in bronchitis, influenza, measles and chicken pox, often prevents the serious conditions which may form an aftermath in these diseases, among them pleurisy, bronchopneumonia, nephritis and otitis media.

In cases where faulty elimination causes toxemia, the elimination through the sweat glands is produced by the Zoalite without causing the depression which results when other means are used.

The sedative effect of the Zoalite is invaluable in treating cases of shock after operation, accident or other causes. It hastens the restoration of normal circulation. In cases of severe burns of large areas the Zoalite has often prevented a fatal termination of the case through its sedative effect on the nervous system. The great shock to the nervous system has been stated as the cause of death in similar cases.

The physician finds innumerable uses for the Zoalite in his office

practice, and nowadays can prescribe the Z-1 and the Z-10 for treatment of minor ailments such as bruises and sprains in the patients home. The Z-30 Zoalite is designed for general irradiations with a high intensity of Infra-red wave lengths. The Z-12 a lighter and more mobile unit is used for local irradiations.

In the Hospital the Zoalite is no less indispensable. Few Physiotherapy Departments are without the Z-30 and one or more Z-12's. In the wards themselves you will often find the Z-12 Zoalite.

Many nurses find this splendid unit of the greatest possible value in the care of post-operative cases especially. The patient who suffers from insomnia finds relief in the Zoalite—and the man in severe pain is rested and relieved by its analgesic effect.

Everyday sees the Zoalite more and more widely welcomed in progressive hospitals. We hope that eventually every ward of every hospital in the country will be equipped with its own Z-12, ready for instant use.

THE BURDICK CORPORATION

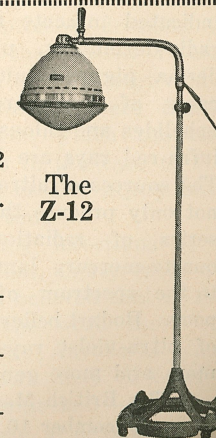
Milton, Wisconsin.

Please send me your new folder illustrating the Z-12 Zoalite and describing its many exclusive features.

Name

Address

City..... State.....



ACTINOTHERAPY IN DERMATOLOGY

A. Bodart (Bruxelles-Medical, October 2nd, 1927, p. 1566) asserts that ultra-violet rays exert a triple action: (1) microbicidal, acting chiefly on the surface and with slight penetrating power; (2) stimulating, exciting the growth, haematopoiesis, and cicatrization of tissues; and (3) external revulsive, when strong doses are used. Quartz lamps were usually employed by Bodart. Actinotherapy can be applied either simply alone, in conjunction with other physical agents, or with chemical, photosensibilizing agents, and the method of application is briefly described. Physical agents, notably infra-red rays, are being more and more used in association with ultraviolet ones, as they have a moderating action on actinic erythema and radio-dermatites. The benefits arising from the combination of these two agents are strikingly seen in surgical tuberculoses. The chief indications for the use of Ultraviolet rays are: the pyodermites, cutaneous tuberculoses, ulcers, cutaneous mycoses, chronic eczemas, certain parakeratoses, and alopecias. Their use is contra-indicated in acute febrile eczema, radio-dermatites, urticaria, xeroderma pigmentosum and in all cases of hyperchromia such as ephelides and chloasma; in the last infra-red rays are best employed. The sources of ultra-violet rays do not only produce these, but also a series of radiations which, in quartz-mercury lamps correspond to the spectrum of mercury vapour. Bodart believes that the use of ultra-violet rays will become more and more general.

The British Medical Journal,
December 10, 1927.

HOW THE PHYSICAL THERAPY DEPARTMENT SHOULD FUNCTION

"The organizing, equipping, and conducting of a physical therapy department in a hospital must necessarily vary with the number of beds in the hospital, its use as a teaching center and the nature of its out-patient department," writes Dr. T. Howard Plank, San Francisco, Calif., in *Better Health*. "These departments are so new to most hospitals that the various staffs need educating as to the possibilities of their aid in caring for the sick or injured. Everyone specializing in the practice of medicine can use some form of physical therapy to advantage.

"To begin with, two things are certain—the department should be financed by the hospital and should become an integral part of it, and it should have a graduate physician as its head. This physician should be a person of considerable clinical experience, both medical and surgical, with a good working knowledge of pathology. While physical therapy cannot claim a really scientific basis for many of its procedures, it at least has reached a point where it requires as a basis for its prescription an intimate acquaintance with the pathology of today.

"The director of the physical therapy department should have the final word as to the physical agent to be made and as to its application. His decision should be made, however, only after a thorough discussion of the case with those in attendance, and a thorough study of the history and the findings of the various laboratory

(Continued on Page 23)

How To Treat

No.21—Minor Ailments in an Industrial Plant

By George E. Crosley, M. D.

This is not so much an article on the technique of treatment, as it is a plea for the use of light therapy in industrial plants. I have in mind a plant employing perhaps two hundred people in factory and office. The Company furnishes a moderate sized room and employs a local physician and his technician an hour each morning. The room is equipped with the necessary apparatus, particularly the light and heat modalities, including the Air and Water-Cooled Quartz Mercury Arc lamps and Zoalites.

All employees are informed that free medical attention is available for an hour each morning that the plant is in operation. They understand that this service is given to those who are at work at the time. Service is not extended to the families of employees, or to employees who are not at work.

The main purpose of the service is to prevent illness and disability by taking care of the beginnings of disease, thus preventing the suffering and loss to the employee, as well as loss and expense to the employer. With these restrictions, the conditions treated may well be considered minor. A recent report gives the following information for the preceding month's work.

Total number of hours this service was given, twenty-five. Number of general Quartz Mercury Arc light treatments given was fifty-four. These were, in the

main, given for the general tonic effect—an effect so sorely needed by the average factory worker, especially during the colder half of the year when there is very little ultra-violet radiation from the sun, and those working inside cannot get the small amount which may be available. In fact, in the northern part of the United States, at least, there is not enough ultra-violet radiation available from the sun from November to March to have any antirachitic value which can be demonstrated in the human.

Twenty-five treatments with Water-Cooled Quartz lamps were given for wounds. Depending upon the location, nature and extent of the wound, various quartz applicators were used. The wound was first cleansed, and the light applied with the applicator in contact for 20 to 30 seconds, after which an antiseptic protective dressing was applied and the patient returned to work. In case of neglected injuries, the wounds were cleansed and dried, after which the treatment was as in the case of fresh wounds. No case of injury caused any loss of time.

Of beginning infections of the nose and throat, eighty cases were treated. It is believed that in these cases alone the work more than pays for itself. Anyone in general practice knows that 95% of the cases of rhinitis and sore throat do not consult a physician until

one to three days after the infection begins. Where service is furnished, as in this plant, convenient and without expense, workers soon learn to make use of it and with the result that there is very little disability from this cause. The highly germicidal rays from the Water-Cooled lamp applied to a beginning area of infection in the nose or throat has not only the direct lethal effect on the germs reached by the light, but the benign inflammation caused by the ultra-violet radiation greatly increases the blood supply to the part influenced by the light and also to adjacent areas not directly reached by the light.

Infection about the teeth accounted for fifteen treatments. All of these were referred for treatment by the dentist—mostly for pyorrhea in various stages.

About seventy-five treatments were given for a variety of conditions, such as eczema, impetigo contagiosa. In this class were the cases of bruises, sprains, bronchitis, neuralgias, neuritis, rheumatism—all of which required the Zoalite to relieve pain and hasten recovery. Minor surgery was used where indicated, as was also advice as to diet. Medication was used in such cases as seemed to require it.

Most of this work can be and is quickly done, as the figures given indicate that the physician in charge and the technician averaged about eleven cases per hour. The highly efficient, accurately controlled Burdick equipment used, reduced the time of treatment to a marked extent, and helped reduce the expense per patient to a very low figure.

A survey of the average factory

or store will show that those suffering from minor, non-disabling ailments, a considerable percentage of which will become disabling unless cared for early, will reach about 100% per month during the winter. Proper care of these cases, quite largely by use of the light and heat modalities, will greatly reduce disability as well as financial loss to both employer and employee. In the factory mentioned there was a total loss of five days time during the month.

One physician and technician for one hour per day for each one hundred and fifty employees will ordinarily care for this work, and reduces the expense to a figure which can be borne by the employer.

ULTRA-VIOLET IN THE

REPAIR OF BONES

Not only is Ultra-violet needed for the growing bones, but its use is just as necessary for the repair of bone. Tisdall and Harris determined that there was an increase in the phosphorus of the blood serum during the repair of bone, and that it reached the normal shortly after the reunion was complete. The same is true of the calcium content. This can further be substantiated by fracturing the bone of an animal and keeping it saturated with atropine to control the sympathetic nervous system and whether or not ultra-violet is used, no repair will occur. If on the other hand Adrenalin is given to accelerate the sympathetic nervous system repair is prompt.

Physiotherapy in Practice,
A. David Willmoth, M. D.
The Medical Herald and Physiotherapist, Page 345.

Fundamentals of Light In Medicine and Surgery

By Herman Goodman, M. D.

(Continued from last month.)

Many investigators have added to the fund of knowledge on ultra-violet light, and its effects on living tissue.

Duclaux has said that sunlight was the best, cheapest, and universally applicable bactericidal agent before the day of suitable apparatus. Downes and Blunt, in 1878, showed that the effect was due almost exclusively to the chemical rays. Graber in 1883 had noted that earthworms placed in a box with colored strips as a cover crawled to the darkest places, namely under the red glass. Dubois, in 1890, showed that the proteus preferred darkness, and was least comfortable in white light. Sunburn of animals occurred only on non pigmented parts. The erythema solare of man is likewise limited to non pigmented areas. Charcot, in 1859, expressed the opinion that the chemical rays caused erythema solare. Unna, in 1885, Woodmark, in 1889, and Hammer in 1891, demonstrated that the chemical rays of the spectrum, and particularly, the ultra-violet rays, were responsible, for explorers in the Arctic Regions, and tourists to the glaciers suffer severely from sunburn even in zero weather, because of the strong reflection of the ultra-violet in sunlight on the fields of ice. Reference may be made to some work which antedates that of Charcot. Rasch has mentioned the work of

Sir Everard Home (1763-1832) whose article entitled "On the Black Rete Mucosum of the Negro being a defense against the Scorching Effect of the Sun's rays". This paper was published in the Philosophical Transactions, London, 1821. I have not been able to find the original. Home actually experimented with his hands under covering, and exposed to the sun's rays with a thermometer registering the temperature. The hand which was uncovered was scorched although the rise in temperature was less. In other words, Home recognized that the irritation was due to some feature of the light, and not to the heat.

John Davy, brother to the celebrated Humphry Davy, and himself a chemist of note, confirmed the findings of Home independently. I have read the report which Davy made to the Medical Society of Edinburgh in which he showed that the change of color took place without inflammation. He tried to find out whether there was a difference between the different rays of the sun's spectrum, but was not successful. Another early contribution to the biology of light was that of Colhoun, reported in the American Medical Recorder, for 1823. Rasch has apparently not read the original in which sensibility of the skin of the face is reported for detecting visible light with the eyes blindfolded.

Robert L. Bowles repeated in the

British Journal of Dermatology for 1893, some of his observations of the effects of light on the skin. He recognized that sunburn was possible without heat, and although he knew of the influence of the alpine snow, also knew that the snow was not essential. He quotes that Professor Langley found in his ascent of Mount Whitney in the Sierra Nevadas, that 'the higher he went, the colder it grew, and the more the sun burnt the skin'.

But it is only in our own life time, yes, in the life time of children of ten, that a modern experiment has been brought to bear on the problem of light in therapy. The ground work was laid down a generation ago. The matter was guessed at a century ago. But this decade has the honor of bringing to bear for the first time the results of a biologic experiment which withstands criticism.

I have just returned from the Research Laboratory of the General Electric Company at Schenectady. I feel highly honored that I was invited to address the members of its staff on the first Saturday morning conference for 1928. I brought to the experts of these laboratories this new concept of ultraviolet: I advanced the idea that mass action of ultraviolet must be discarded in the light of our most recent work. It must be recognized that we are dealing with specific reactions due to definite portions of the spectrum. The engineers and electrical experts were especially concerned with my concept of VITAL ultra-violet, because their efforts in physics had previously been along the lines of ultra-violet in distinction to visible radiation or heat. From now on, they must concern themselves with

that portion of the ultra-violet which does not pass through ordinary glass, for to-date, it so happens that considering the solar source, these bands which seem responsible for the known measureable biologic reactions of man and animals are within the limits set for that zone.

Within a short time we will publish some of our studies on the quantitative analyses of ultra-violet emission from common sources as used in my practice. It will then be possible to compare clinical results on the basis of QUANTITY of emission in the VITAL zone, and ultimately as we spectralize more and more, accurate quantitative prescriptions will be available for specific bands of wave lengths for specific purposes. As time goes on, as we become more keen in our analytical methods, new processes will be found dependent on specific reactions of particular frequencies, because wave length and frequency are but inversely proportionate to each other.

REACTION TO TREATMENT

MUST BE NOTED WITH CARE

Hill and Eidinow drew attention to the fact that when the bactericidal power of the blood was below normal it could be raised considerably by ultra-violet irradiation of the skin. When an overdose of irradiation is given the bactericidal power appears to fall off again. They regard the optimum dose as that which raises the bactericidal power to its highest level, and the erythema dose has been related to the bactericidal power by a series of careful investigations. Skin areas of different ex-

tent were tested, and it was found that for the average adult an area of approximately 26 inches square irradiated to the extent of mild erythema gave the best results. It is assumed in these investigations that the degree of improvement in the bactericidal power of the blood is a reliable index of the dose that is best for the patient. The results would appear to show that this is the case.

Widely different views are held on the value of pigmentation in relation to the ultimate progress of the patient. Rollier attaches great importance to it, and considers that the cases that pigment well are the cases that do best in tuberculosis. Observers in this country have not been able to trace any very definite relationship between pigmentation and progress, and generally it appears that light clinicians pay little attention to it. In many of the Scottish institutions very satisfactory results have been obtained in patients that showed no pigmentation at any time. If our knowledge of the functions of melanin is correct, it is a little difficult to understand why pigmentation should have any relation to progress. Evidence is steadily accumulating to show that it has probably no such relationship.

Since the erythema test cannot always be safely relied upon, and the bactericidal test is inconvenient clinically, it is well, to have other guides to dosage.

Initially the erythema dose should be determined and irradiation should be begun carefully with a dose below—and in the case of young children well below—that required to produce erythema. The reaction to the first treatment

should be carefully noted. Normally patients feel better, or at least should not be upset. A tired feeling, headache, giddiness, tachycardia, rise of temperature, anorexia or sleeplessness are symptoms pointing to overdosing. Where any of these signs is present the patient should be allowed to recover before being again irradiated, and then a reduced exposure should be given or the distance from the lamp increased.

Some Essentials of Actinotherapy—By the Medical Editor,

The British Journal of Actinotherapy, December, 1927, Page 172.

ASTHMA IN CHILDREN CURED BY APPLICATION OF ULTRA-VIOLET RAYS

I have been especially interested during the past few years in the type of asthma to which children are subject. These young individuals very rarely give urinary findings suggestive of toxemia—a point which was quite strongly emphasized this evening. Quite a few of these children have been cured of their asthma by the simplest kind of a method possible—simply the application of ultraviolet rays for their systemic or metabolic effect. A systemic course of treatment usually gives improvement in a very short period of time. The favorable reports in this connection appearing in foreign literature have been an inspiration in the carrying out of this work here.

Bronchial Asthma,
Dr. A. R. Hollender,
Clinical Medicine and Surgery,
December, 1927, Page 927.

Extracts from Current Literature

THE DISEASES FOR WHICH ULTRA-VIOLET LIGHT IS THE TREATMENT OF CHOICE.

(1) **Rickets.** Ultra-violet light baths can bring about a steady progress towards recovery in this condition, even when the diet and home conditions cannot be materially improved; but if dieting, hours of rest, and ventilation in bedrooms, etc. can at the same time be made satisfactory, then very rapid changes towards recovery in the affected joints and bones take place. These changes are best shown and controlled by X-Rays taken before and during a course of treatment. For this condition either the mercury vapour or the carbon arc are suitable. The former is usually preferable as satisfactory results can be obtained by three treatments a week for comparatively short periods, thus freeing the mother for her household duties.

Dr. Howard Humphris advocates a series of light baths to expectant mothers and to mothers during lactation; this suggestion has much to commend it. He bases his plea on the known heavy calcium call at this time, and that anything that helps this call to be easily met must be a correct procedure.

(2) **Lupus.** Provided both general light baths and local light treatment can be given there is no question of the benefits of ultra-violet light in this condition. But if the Finsen-Reyn technique cannot be followed faithfully, disappointment will occur, and then it is better to fulgurate the nodules with the diathermy current and confine the light treatment to general irradiation.

(3) **Skin conditions.** There is hardly a skin disease that has not been claimed to be cured completely by ultra-violet light, but especially psoriasis, eczema, alopecia-areata, acne and furunculosis. Certain workers claim it as almost specific for these conditions, while others (for exactly the same diseases) say it is of no use.

The truth lies probably between these extremes, and by close clinical consideration of the source of light, the method of application, and the patient's general reaction to treatment, satisfactory selection of cases should be possible. In alopecia-areata it is essential to produce an erythema, and in doing this the effects of radiation on the brain may be neglected. Patients should, in these conditions, be especially warned that a period of apparent exacerbation may occur. Treatment is not so necessary daily, but should be given not less than three times a week.

(4) **Lumbago and Sciatica.** Here in quite a large number of cases, complete relief by a single treatment can be secured. To do this it is necessary to give so large a dose that peeling or even blistering is secured.

(5) **Chronic tuberculous glands, sinuses, bone infections, etc.** Here the treatment in addition to the usual methods as regards diet and codliver oil, should be given daily by means of full length light baths. The duration of treatment depends largely upon the source of light, and at the Finsen Institute these light baths are often given for 80 minutes at a time.

(6) **Debility.** Cases of debility, especially those associated with a

chronic pallor, and abdominal discomfort derive a great benefit provided the treatment is given very carefully and gradually at fairly long intervals, i.e. not more than three times a week. The beneficial mental effect is often most striking, and is reminiscent of the effect of the administration of an internal secretion in a responsive case. In this connection, the interchangeability of ultra-violet light and vitamins in the well-known rat experiments is of interest.

(7) **Burns, Indolent Ulcers, Sinuses, etc.** As far as I am aware, the use of ultra-violet light in the treatment of burns is practically confined to this Hospital. In my opinion in these difficult cases with their painful dressings, the most dramatic effects of ultra-violet light are seen. Not only does it appear to have a specific healing effect, but the scar is softer than by any other procedure, and the dressings rapidly become less painful and oozing is reduced. The light is shone on to a burn from a mercury vapour lamp at a distance of 30 ins., commencing with two minutes, the burnt area having been previously sprayed with liquid paraffin.

This procedure is quite distinct from that employed in the treatment of indolent ulcers, sinuses, etc. Here the Water-cooled lamp with its ability to cause strictly localized aseptic counter-irritation is the treatment of choice.

(8) Other conditions which are frequently benefited by ultra-violet light treatment are some cases of arthritis, all cases of mal-union of bones, and many cases of dyspepsia.

British Journal of Actinotherapy, November, 1927.

CALCIUM DEFICIENCY PRECEDES CANCER

As the result of some years of investigation, Dr. Ellice McDonald, of Philadelphia, in M. J. and Record, June 15, 1927, suggests a biochemical theory of cancer; i.e. that it is due to cell reproduction, favored by a certain optimum increase of the univalent elements, such as sodium and potassium, over the bivalent elements, such as calcium, and magnesium, and that this specific alkalinity and ionic association produces such increase of permeability of the cell membrane and increase of conductivity as will favor cell division.

Dr. McDonald's investigation of 30 cases of untreated or advanced carcinoma showed that every one had a blood plasma reaction more alkaline than normal. In the majority of these the blood serum became more acid than normal after irradiation.

The acid effect of radiation may be intensified by substances which produce an acid pH. These substances are mainly the bivalent substances and negative colloid and lead (used very successfully in cancer by Bell, of England), also produces a negative colloid. Both lead and calcium act in a parallel way and increase blood acidity.

McDonald thinks that the treatment and prevention of cancer might be helped by controlling, directing and aiding radiation by means of negative colloids, and by selecting the proper negative colloids for the nonoperative treatment of cancer. Cancer is a disease of old age, and in later life there is a deviation of the normal acid-base equilibrium to the alkaline.

In an article in the same issue of M. J. and Record, Dr. Willy Meyer, of New York City, also shows that in rapidly growing cancers there is much potassium and but little calcium. This unbalance is not the consequence of tumor growth but precedes it.

Calcium and Cancer,
Clinical Medicine and Surgery
Page 60.

SEASONAL VARIATION IN ANTIRACHITIC EFFECT OF THE SUN'S RAYS

The short ultra-violet rays are readily cut off by the smoke, dust and moisture in the atmosphere. It is therefore evident that they will be markedly reduced in the winter time, and also in the early morning and late afternoon, when the rays have to pass through a greater distance of our atmosphere than when the sun is high in the sky. Dorno, in the Swiss Alps, found that the ultra-violet content of the mid-day sun in January was only about 10 percent of that of the mid-day sun in July. He also found that the shortest ultra-violet rays found at mid-day in December were 12 mm. longer than those found in July. With the exception of the determinations just reported by Best and Ridout, of Toronto, no measurements of these rays in Canada or the United States have been recorded.

As long ago as 1884 Kassowitz commented upon the seasonal variation in rickets as being one of the striking variations of the disease. In view therefore of our present knowledge of the role played by sunshine in the prevention and cure of this disease

through irradiation of both the living individual and his food, the importance of a study of the seasonal variation of its antirachitic action is at once apparent.

In planning an experiment of this type to extend over a period of one year, many difficulties were encountered. We chose as our experimental animal the albino rat, and the question at once arose as to how this animal would stand the exposure to below zero weather. There was no information in the literature to aid us in this regard, so we had to construct specially heated cages. Each week throughout the year from 30 to 40 rats were started under the desired experimental condition. They were fed McCollum's rachitogenic diet 3143. The majority were placed outside daily, while controls were kept inside and carefully protected from all sources of ultra-violet rays. After four weeks they were all killed and examined.

A study of the sunshine records, kindly furnished by the Dominion Meteorological Bureau situated within half a mile of the hospital, showed the impossibility of attempting to obtain anything like a two hour daily exposure to sunshine throughout the year. It is, therefore, quite evident from the practical standpoint that it would be more valuable simply to put the rat out for a two-hour period daily from 11 a. m. to 1 p. m., just as an infant would be placed outdoors, regardless of the amount of sunshine during this period. Consequently, a two hour exposure means that for a certain percentage of this time sunshine was available, while for the remainder of the time the rats were receiving skyshine or reflected light

from the clouds and sky. Naturally, during the winter months less sunshine was secured than during the summer months, but this does not interfere with the practical value of the conclusions. All the observations were made on the roof of the hospital, five stories high and exposed to the dust and smoke of the average city.

The methods employed for determining the degree of rickets were: (1) the estimation of the inorganic blood-phosphorus; (2) the determination of the percentage of ash in the bones; (3) roentgenograms of the long bones of the legs. All of which have been proved adequate for estimating the degree of growth in the skeletal system.

Results

After comparing the chemical and x-ray examinations of the rats having a two-hour daily exposure with those kept inside on the same diet, it was shown that

in Toronto there is a slight but definite antirachitic effect of sunshine during the winter months. At the end of February and the first week in March a very sharp increase occurs, which is maintained throughout April and May. It was further observed that the antirachitic effect of April and May sunshine during the hours of 11 a. m. and 1 p. m. is approximately eight times as great as the antirachitic effect during December, January and the greater part of February. The effect of fresh cold air as an antirachitic factor was also studied and found to be negligible.

The Seasonal Variation of the Antirachitic Effect of Sunshine and its Effect on Resistance to Disease.

By Alan Brown, M. D., and Frederick F. Tisdall, M. D.
Canadian Medical Association Journal, December 1927, Page 1426.

Just Published!

THE GALVANIC
CURRENT AND LOW
VOLTAGE WAVE
CURRENTS IN
PHYSICAL THERAPY

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AND
FREDERICK H. MORSE, M.D.

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Milton, Wisconsin

Two Modalities In One— The Combination Series of Mercury Arc Lamps

The man who makes only occasional use of Ultra-violet Therapy to take advantage of its powerful influence upon the general condition of certain patients will probably be content to use only the regenerative rays delivered to larger skin surfaces by the Air-Cooled Mercury Arc Lamp. But as his experience with the modality grows and he becomes better acquainted with the splendid results to be gained through Ultra-violet irradiation he is almost certain to require the Water-Cooled type of generator in order to utilize the high intensity of germicidal rays which it transmits. Evidence of the powers of the longer wave lengths will convince him of the potency of the shorter wave lengths. And eventually he will want both modalities available.

In the Hospital, both types of generators are almost essential and one will be in as great demand as the other. The Water-Cooled Lamp combats and corrects the local condition and the Air-Cooled lamp brings prompt recovery from the general effects of the local infection. Practically every Physiotherapy Department is equipped with both modalities and keeps them equally busy constantly.

Burdick combines both modalities in one—in the Combination Series of Mercury Arc Lamps,

possessing both Air and Water Cooled Casings. There are three individual types in the Combination Series, each of them a compact and economical unit for the generation of either Air-Cooled or Water-Cooled Ultra-violet.

The Self-Contained Combination Units have their own water-cooling system and are absolutely independent of an outside source of supply. This Burdick Unit is the finest lamp of its kind manufactured today. Both burners are the high intensity quartz Uviarcs. The Air-Cooled Casing is the Super Standard type with many exclusive features which contribute to its superiority over other makes. The Water-Cooled casing is the D-shaped type which fits the operator's hand so conveniently. It is equipped with the famous Ever-Clear quartz window which delivers a maximum intensity of the short Ultra-violet wave lengths and maintains this intensity at the peak. The voltmeter and voltage regulator control dosage.

Physicians to whom perfect mobility of the generator is not of great importance sometimes prefer the more economical Faucet type Combination Lamp which derives its cooling stream from any cold water faucet. The Ever-Clear Window is cooled by water which passes around its circumference in-

stead of across its face and therefore impurities in the outside water supply can not be deposited on the face of the quartz to destroy its efficiency.

The Burdick Portable Combination model is a Bedside Unit, delivering a high intensity of either Air-Cooled or Water-Cooled Ultra-violet—especially designed for patients whom it is unwise or inconvenient to move for treatment. Shutters have been added to the Air-Cooled casing in order to protect the patient from premature exposure while the voltage builds up.

In hospitals especially, this portable Combination Unit has been welcomed for use in the wards and in private rooms. It may be or-

dered with a light four wheel truck to facilitate moving it from room to room.

The lower cost of the Combination Unit is due to the fact that both casings are operated from a single control cabinet.

Of course, one of the generators must be idle while the other is being used but this is not serious except in offices where Ultra-Violet Therapy is a specialty and then there are usually several lamps of each type. In most cases, the physician will find it wise to investigate the Burdick Combination Series carefully. The chances are that he will take advantage of the chance to purchase two modalities in one at a considerable saving.

RAPID DEVELOPMENTS IN FIELD OF PHYSIOTHERAPY

While a number of new or improved pieces of apparatus for the application of physical agencies to the treatment of disease have appeared during the past year, the most significant fact in this connection is that the studies are becoming intensive rather than extensive; quantitative rather than qualitative. In other words, that we have ceased to be wholly preoccupied with what physical measures will do, and are striving to discover how and why they do it.

Efforts are also being made to standardize the nomenclature of physical therapy and render it sufficiently accurate and dignified to be used by scientific men without a shudder.

Recent investigators have shown that the irradiation of a lactating woman, with ultra-violet rays, gives to her milk demonstrable antirachitic properties. This find-

ing may prove to be of decidedly clinical importance.

While the development of apparatus for the administration of the various light energies visible and invisible, goes on apace, especially in enlarging the field of application of infra-red radiations and making the indications for their use clearer and more definite—they are now known to be beneficial in all types of deep-seated pain and to cause general relaxation and increased activity of the skin structures, as well as equalization of the circulation—the appearance of appliances for administering mechanical massage, vibration and manipulation has been particularly notable. A number of excellent machines for this purpose are now available and should be more widely used.

Editorial

Progress in Medicine.

Clinical Medicine and Surgery,
January 1928.

THEORIES AS TO THE ACTION OF ULTRA-VIOLET RADIATION

A recent survey of the literature of ultra-violet radiation discloses so many theories of the action of these rays that to give anything like a detailed account of each would extend this lecture too greatly. A brief summary, however, of the better known ones, even at the expense of some repetition, will be useful, and will enable me to indicate those which are most helpful clinically. They are:

1. That the fat of the skin becomes photo-active after irradiation. (Harthausen).
 2. That the rays coagulate albumen, destroy superficial cells with liberation of ferments and subsequent absorption. (Pincusson).
 3. Increase of haemo-bactericidal properties of the blood. (Colebrook, Hill, Eidinow, and others).
 4. That fluorescent substances in skin such as quiniiodine when irradiated become toxic to micro-organisms and that this toxic substance can stimulate nerve endings. (Professor Dixon).
- Note—This is opposed to Dr. Peacock's suggestion that fluorescence of skin is protective against over-dosage by degrading Ultra-violet Light.
5. That light effects are only proportionable to total energy absorbed.
 6. That ultra-violet light increases absorption of calcium and phosphorus in intestines, probably due to effect on metabolism of the absorption of irradiated cholesterol from the skin. (Webster, Hill, Robinson and others).

7. That Ultra-violet Light induces changes in the electrical condition of protein, altering the hydrogen concentration, i.e., a form of protein shock. (Dukes, Elder and others).

8. That cells on being oscillated convert the oscillations into nerve stimuli; from this erythema is indirectly produced.

9. That the parathyroids take on increased growth.

10. That the nuclei of the cells are particularly absorptive of ultra-violet light, and that the subsequent toxin derived from the splitting up of the chromatin brings about an increased blood supply.

The list of theories given above forms an imposing array and, as is usually the case in such conditions, means that no single one of these theories is acceptable to the exclusion of the others, but rather that there is some truth in the majority. Speaking clinically the theories that appear to fit in best with the results obtained are the cholesterol theory, the quiniiodine theory, and the theory of liberation of ferments from destroyed superficial cells; for quite undoubtedly

we find the results of ultra-violet light irradiation vary according to whether the basic health and powers of resistance of the patient are good or bad; indeed this point should be the prime consideration in estimating dosage, and makes it impossible to lay down any hard and fast rules as regards time, distance, and area of skin exposed.

British Journal of Actinotherapy, November, 1927.

The Medical Use of Ultra-violet light. C. B. Heald, M. D.

(Continued from Page 10)

procedures, a complete understanding of the pathology and what can be accomplished to eradicate or modify it.

"In addition to the director of the physical therapy department, there should be a sufficient number of assistants or aids to carry out the prescriptions. The number of aids to carry out the prescriptions. The number of aids necessary varies with the number and class of patients to be treated. A director and one or two aids should be able to care for a department in a 100-bed hospital, adding one or more aids for each additional 100 beds. For hospitals of 300 beds or more there should be one or more assistant directors to aid in prescribing the treatments and varying the technique to obtain the best results.

How the Physical Therapy Department Should Function, The Modern Hospital, December, 1927, page 51.

Dr. Howard Plank.

ULTRA-VIOLET INDICATED IN TREATMENT OF ANEMIA

Koesser and Maurer think that vitamin A is essential for blood regeneration and that the clinical picture of pernicious anemia is due to deficiencies of vitamins A, B and C.

These writers record their experience based on observation of 42 patients with demonstrated pernicious anemia, treated in the Cook County and other Chicago hospitals.

All the patients treated (except one) are alive today, in good health and show a quantitatively and qualitatively normal blood picture. The authors are satisfied that per-

nicious anemia is the result of vitamin deficiency, continued over a long period. This vitamin deficiency may arise either from underfeeding or from insufficient utilization of food.

Koesser believes that the results obtained with liver are due to its containing vitamins A, D and E, especially vitamin A; but recent investigations suggest that there is also in liver a substance connected with blood regeneration which is not a fat-soluble vitamin.

Macht made a number of investigations with a view to detoxification of the blood serum of pernicious anemia. It was found that, while irradiation of normal blood serum with ultra-violet rays did not alter its phytotoxic index, similar irradiation of pernicious anemia blood serum did materially reduce its phytotoxicity. Furthermore, by experimentation with a number of dyes as sensitizers, it was found that some of them rendered the detoxifying effects of ultra-violet irradiation of pernicious anemia blood serum much more pronounced. Eosin and tetrabromfluorescein were found to be the most effective of the dyes.

Macht used his phytopharmacologic test as a criterion of the value of different treatments of pernicious anemia, testing the blood at different epochs in the course of each type of treatment.

Transfusion of blood was found not to eliminate, permanently or for any considerable length of time, the toxic substance responsible for the inhibition of plant growth.

Nine cases which had been treated with liver diet were tested. In 4 there was a marked decrease of toxicity; in 1 the blood reacted as

normal blood; in some others the reactions were not so marked and the blood serum, even after a prolonged liver diet, still showed marked phytotoxicity.

Ultra-violet irradiation of pernicious anemia blood serum, showed in every case a marked decrease in the phytotoxicity of the serum.

With regard to the use of dye sensitizers, Gyorgy and Gottlieb had shown that ultra-violet irradiation, plus eosin, had been very effective in infantile rickets. In Macht's experimental testing of the effects of irradiation, plus eosin or tetrabromfluorescein, on pernicious anemia blood serum, the patients were given liver diet in addition. In all cases tested there was a definite improvement in the phytotoxicity, which went hand in hand with amelioration of the clinical symptoms.

The blood pigment, hematophorphyrin, stored in the liver, is a powerful sensitizer, not only for ultraviolet but also for the longer and visible sun rays. Macht thinks its presence in liver may help the irradiation effectiveness.

It would therefore seem, from the present aspects of the literature, that the treatment of pernicious anemia resolves itself onto: liver diet; feeding food of high caloric value, rich in vitamins; and ultra-violet irradiation, with or without the use of sensitizing dyes.

Progress in the Control of Pernicious Anemia

(A synopsis of Recent Literature) W. A. Brennan, A.B., Clinical Medicine and Surgery, January 1928, Pages 33 and 34.

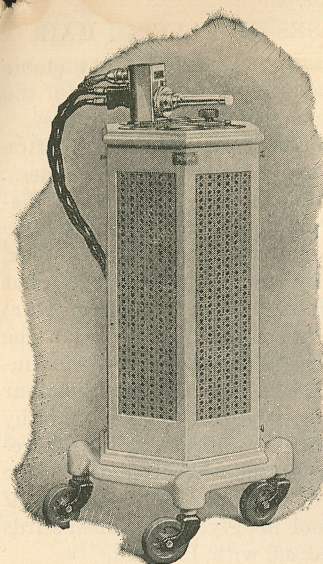
PLANNING AND FURNISHING ROOMS IN THE HOSPITAL PHYSIOTHERAPY DEPARTMENT

In considering space for this department it is wise to remember that much space may be saved and the technicians's time reduced in giving treatments by dividing a large space into smaller spaces by means of wires stretched seven feet above the floor from which curtains are hung. This system of forming cubicles is the least expensive and has the greatest flexibility. It has the disadvantage of less privacy than separate rooms, but if there are separate hours for men and women this arrangement will have few disadvantages, as many hospital cases are treated in their private rooms.

The floors should be covered with linoleum, except the hydrotherapy and whirlpool bathrooms which should have tile floors. Both alternating and direct current should be wired into all treatment rooms with dissimilar wall receptacles so that it will be impossible to mistake them and plug in wrong. This prevents damage to apparatus, and the two kinds of currents will save considerable cost on apparatus, as different machines require different currents, and the cost is considerable for rotary converters or motor-generators furnished with each machine.

Planning, Placing and Equipping a Hospital Physical-Therapy Department.

John S. Coulter, M. D.
Hospital Progress, November, 1927, Page 438.



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Here is the latest of the Zonalites—a highly perfected modality which delivers a rich concentration of Infra-red rays for the production of penetrating heat.

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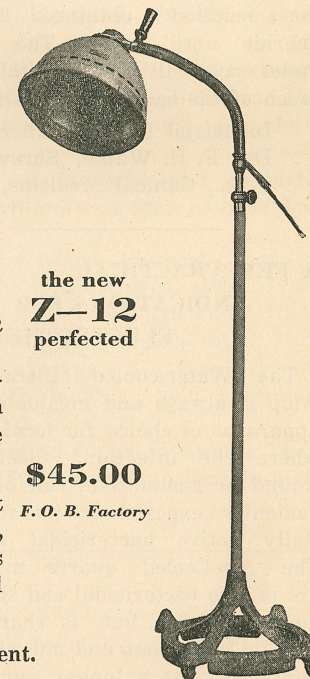
The most economical of the Faucet type lamps which derive their cooling stream from the water faucet. Designed for convenient short applications of intense Ultra-violet.

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INDUSTRIAL PHYSICAL THERAPY

Rib fractures should be strapped and infra-red radiations (not diathermy, in fresh cases) applied for one-half to one hour. After 4 or 5 treatments the pain will be relieved. The straps can be removed at the end of two weeks.

To clean a badly lacerated wound, filled with dirt and greases, use gasoline first, followed by "alcorub", which contains enough acetone to act as a fat solvent. Apply the air-cooled ultra-violet lamp, close to the wound, until a good reaction is obtained. Do not debride until later: The ultra-violet rays will restore vitality to much of the badly damaged tissue.

Industrial Physical Therapy
Dr. F. H. Walke, Shreveport,
La., Clinical Medicine, 922.

A FEW PRACTICAL INDICATIONS FOR ELECTROTHERAPY

The Water-cooled Ultra-violet lamp is always and invaluablely the apparatus of choice for local effect where the infection, ulceration, wound or traumatism can be conveniently exposed to its superficially active bactericidal action. The Air-Cooled quartz mercury arc is also bactericidal and slightly more penetrant, but is characterized by more heat and must be administered for a longer seance of time; also, it is by no means so conveniently and definitely applicable for small, localized lesions.

A Few Practical Indications for Electrottherapy,

J. E. Waddington, M. D.

Archives of Physical Therapy,
X-Ray, Radium, Dec., 1927.

CASES OF FALLING HAIR

Amazing results are obtainable by quartz lamp irradiation in the falling out of hair and baldness.

Seborrhea, for instance, is often the cause of premature baldness. Radiation of the head at a distance of 30 cm. for one to two minutes at a time, once a week, not only cures the seborrhea but stimulates a new growth of hair; even incipient baldness can be cured by this treatment. (It is interesting to note the darker colour of the newly-grown hair). Side by side with irradiation, seborrhea requires sulphur treatment in the form of a 20 per cent solution of Thigenol in glycerine, afterwards washed off with Pixavon.

The same treatment is very effective with alopecia areata totalis disseminata; indeed even alopecia totalis can occasionally be cured by this means.

Loss of hair as a result of anaemia or after fevers (influenza, erysipelas, typhoid) can as a rule be arrested, and new growth stimulated. But in such cases, in addition to the local irradiation of the head, general body irradiation should be applied. Indeed, the latter is more important.

Cases of Falling Hair

Dr. F. Thederer,

The British Journal of Actinotherapy, November, 1927.

And How!

A New York actress was giving a benefit performance at Sing Sing. "Stone walls do not a prison make, nor iron bars a cage," she trilled.

From the back of the room a deep voice ejected, "But, lady, how they do help!"

—Pennsylvania Punch Bowl.

Books on Physio-Therapy

The books listed below may be purchased direct from the Burdick Corp.

- Herman Goodman, B. S., M.D.—Basis of Light in Therapy. One hundred and fifty-seven pages, profusely illustrated. Price \$3.50.
- Percy Hall, M. R. C. S. (Eng.) L. R. C. P. (Lond.) Ultra-Violet Rays in the Treatment and Cure of Disease. One hundred and eighteen pages, illustrated, cloth binding. Price, postpaid, \$3.50.
- A. R. Hollander, M. D., and C. O. Cottle, M. D.—Physical Therapy in Diseases of the Eye, Ear, Nose and Throat. Three hundred pages, 81 sketches, green buckram cover and gold stamping. Price, postpaid, \$5.00.
- Frederick W. Lake, D. M. D.—Ultra-Violet Radiation in Dental Pathology. One hundred and twelve pages, illustrated, flexible leather cover, gold stamped. Price \$3.75.
- G. Betton Massey, M. D. and Frederick H. Morse, M. D.—The Galvanic Current and Low Voltage Wave Currents in Physical Therapy. Excellently printed with 65 fine illustrations and bound in cloth. Price \$6.00.
- Edgar Mayer, M. D.—Clinical Application of Sunlight and Artificial Radiation. Four hundred and twenty-six pages, illustrated. Price \$10.00.
- T. Howard Plank, M. D.—Actinotherapy and Allied Physical Therapy. Four hundred and fifty-one pages, profusely illustrated. Price \$7.50.
- Eleanor H. Russell, M. D., and W. K. Russell, M. D.—Ultra-Violet Radiation and Actinotherapy. Two hundred fifty pages illustrated, \$5.00.
- C. M. Sampson, M. D.—Practice of Physiotherapy Six hundred and twenty pages, 146 illustrations, silk cloth binding, gold stamping. Price, postpaid, \$10.00.
- Joseph E. G. Waddington, M. D., C. M.—Practical Index to Electro Therapy. Three hundred and sixty pages, 160 illustrations, flexible binding. Price \$6.50.

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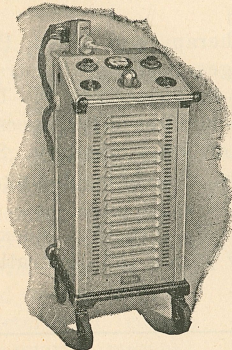
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\$785.00

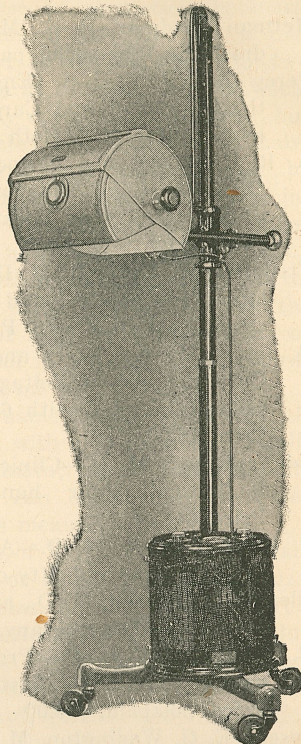
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We have expert Service Men, trained in the Burdick factory, and familiar with every detail of this equipment who give prompt and efficient service at any time.

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'Ad' Infinitum

Yes, John's started smoking Luckies and studying French, and now he can't decide what he wants to be—the firm's Paris representative or a big baritone. —Judge.

Or What Have You?

Macpherson, ClonCarthy, and Isaacstein were all invited to Thompson's golden wedding.

Macpherson took a jar of gold-fish.

ClonCarthy took a box of Gold Flake.

Isaacstein took his friend, Gold-berg. —Pink 'Uu.

What this country needs is fewer people telling us what this country needs. Judge.

A TEST CASE

Young Lady: "Druggist, can you fix up a dose of castor oil so that it will not taste?"

Druggist: "Certainly. If you will wait a few minutes, I will fix you up. Will you have a drink of soda while you are waiting?"

Young Lady: "Thank you, yes."

Druggist disappears behind the partition to reappear a few minutes later. "Is that all you require?"

Young Lady: "Yes, thank you. Is it ready?"

Druggist: "You've just drank it."

Young Lady: "Goodness gracious, that was for mother!"

—Oral Hygiene.

Harnessing Human Nature

"What in the world is that?" exclaimed the visitor to the hospital, as he entered a long hall. He pointed to a treadmill arrangement at one side in which several worried-looking men were unceasingly walking and getting nowhere.

"That is for prospective fathers," said the escorting nurse. "We get enough power from them, while they are waiting, to run all of the machinery in the place."

—Life.

The Bedside Manner

"My dear Grannie, I hope you are quite well. . . ." This was, I thought, how every schoolboy, condemned to write to his grandmother, began his letters. But I have found a variant. The young hopeful is a doctor's son, and he began: "My dear Grannie, I hope you are free from all diseases."

—London Daily News.

Recognition

"I understand Jones has been given a medal by the Society for Pharmaceutical Research."

"Yes, he has invented three new types of sandwiches." —Life.

The Latest Variation

"They laughed when I started to speak to the waiter in perfect French."

"Why was that?"

"Because the waiter was a German." —Life.

Editorial

(The Burdick Corporation assumes no responsibility at all for the sentiments expressed on this page. They are the opinions of an individual and should be so regarded.)

SELLING THE PHYSICIAN TO THE PUBLIC

Tremendous competition for the public's dollar urges a hundred different ways to spend each cent a man can lay his hands on. In this bitter fight for precedence the medical profession must stand aloof and watch millions of dollars diverted into useless channels in the name of health. Yet after all it is the public who suffers most. A bold nation-wide campaign to sell the trained physician to the public would pay the richest dividends in terms of general welfare.

Such a plan seems to be very difficult of realization at present. But is it so difficult? Certain rather isolated efforts are being made along this line—and several of them are meeting with success. There is the Public Health Institute in Chicago, sponsored by men whose names are a guarantee of integrity, with its work in the prevention and cure of venereal diseases. Full pages in the newspapers are teaching the public the seriousness of these conditions, weaning them away from self-diagnosis and self-dosage with useless or harmful nostrums, and selling them on the value of scientific treatment.

In Detroit there are the annual Clinics on Cancer, at-

tended by hundreds of persons with suspicious symptoms, which play an important part in detecting the disease in the early stages. The public is informed of this opportunity by spirited paid announcements in the newspapers accompanied by voluminous publicity articles, rousing the public to the vital need for watchfulness.

In Texas the County societies are doing their part to waken the public to the dangers of carelessness and unscientific treatments. In Wisconsin the first steps have already been taken along the same lines, and in many other states and communities similar action has been taken or is being contemplated.

The doctor cannot advertise his services individually. But the medical profession as a body may adopt an aggressive policy and literally sell the idea of scientific diagnosis and treatment to the public. It can be done with sufficient forcefulness—and without sacrifice of dignity.

A yearly contribution of four or five dollars from every Doctor of Medicine in every state would provide the funds for a mammoth campaign of education in the leading national magazines and in newspapers as well. The advertisements should be more than

purely educational—they should be forceful pieces of printed salesmanship. And they would save many millions of dollars now wasted—and many broken bodies and broken hearts.

THE MEDICAL APPEAL IN LAY ADVERTISING

While the physician has avoided a personal appearance in the advertising pages of the magazine, the business man has not hesitated to assume his prerogative of prescribing for the patient and sells his merchandise as a panacea for a remarkable variety of conditions. A cursory examination of any periodical will demonstrate the power of the "health appeal."

First there is the "vitamine" hunted from pillar to post by the breakfast food man, the dairyman, the sauerkraut man, and their friends until the reader has become so bewildered that he is about ready to relegate the word to limbo along with its predecessor "calory" which was so over-worked a few years ago.

Then there is the cigarette that never irritates the throat no matter how many you smoke and its competitor, treated so that it would seem that no self-respecting opera singer can get along without them. Now there is to be a "Listerine" cigarette with mystic properties ostensibly allied to the famous mouth wash. Possibly it will aid in the cure of dandruff. All of these manufacturers claim

medical authority for the statements that sell their products. It seems, however, that, be the facts as they may, the public's credulity is becoming a trifle strained. Most men know that too many cigarettes mean a sore throat and a cough in spite of the picture on the package.

It is important to all of us to preserve the credability of the professional opinion. Far fetched claims not only destroy the public's confidence in the value of the medical recommendation but they defeat their own purpose, which is the only consideration likely to influence the manufacturers. The credulousness of the advertisement reader is obviously enormous, but it has its limits. And at the risk of being platitudinous, I'll repeat that truth makes the best and most productive advertising.

The Sad Ending

A fourteen-year-old Canadian school boy has been expelled because his teachers claim that he is incapable of telling the truth. If this young man doesn't mend his ways he will likely end up in the Weather Bureau. —Judge.

The Inquiring Reporter

Question:

"Have you pyorrhea?"

Answers:

"Yes."

"Yes."

"Yes."

"Yes."

"No."

—Carnegie Tech Puppet.

BURDICK AUTHORIZED DEALERS IN THE UNITED STATES AND CANADA

These dealers handle Burdick Precision Quartz Lamps—
the Zoalite, and the Burdick Electric Light Bath Cabinet.

Albany.....	Weinig X-Ray Co.
Binghamton.....	Weinig X-Ray Co.
Birmingham.....	Doster-Northington, Inc.
Boston.....	General X-Ray Company.
Buffalo.....	Weinig X-Ray Company.
Chicago.....	Be Gole X-Ray Company.
Cleveland.....	Schuemann-Jones Company.
Dallas.....	R. P. Kincheloe.
Denver.....	Paul V. Muckle X-Ray Company.
Detroit.....	G. A. Ingram Company.
El Paso, Texas.....	Southwestern Surgical Supply Co.
Ft. Wayne.....	Wayne Pharmacal Co.
Honolulu, T. H.....	Honolulu Photo Supply Co.
Indianapolis.....	Dick X-Ray Company.
Jacksonville.....	Guyer X-Ray Company.
Kansas City, Mo.....	Dick X-Ray Company.
Kansas City, Mo.....	Rosenthal X-Ray Company.
Los Angeles.....	Bush Electric Corporation.
Louisville.....	Dick X-Ray Company.
Memphis.....	Dick X-Ray Company.
Milton, Wis.....	Victor Hurley.
Milwaukee.....	Pengelley X-Ray Company.
Minneapolis.....	Pengelley X-Ray Company.
Montreal.....	Casgrain and Charbonneau.
Newark.....	Ille Electric Corporation.
New York City.....	Ille Electric Corporation.
Norfolk.....	Powers and Anderson, Inc.
Oklahoma City.....	Rosenthal X-Ray Company.
Omaha.....	Seiler Surgical Company.
Philadelphia.....	Charles Lentz and Sons Company.
Phoenix.....	Southwestern Surgical Supply Co.
Pittsburg.....	Wasserott Brothers
Portland, Ore.....	Shaw Supply Company.
Richmond.....	Powers and Anderson, Inc.
Rochester.....	Weinig X-Ray Co.
St. Louis.....	Dick X-Ray Company.
Salt Lake City.....	James W. Reeve.
San Francisco.....	Bush Electric Corporation.
Seattle.....	Shaw Supply Company.
Shreveport, La.....	Surgical Sales Company.
Syracuse.....	Weinig X-Ray Co.
Tacoma.....	Shaw Supply Company.
Toronto.....	Ingram and Bell.
Vancouver, B. C.....	Fisher and Burpe, Ltd.
Washington.....	Kloman Instrument Company.
Wilkes-Barre.....	Wasserott Brothers.
Winnipeg.....	Fisher and Burpe, Ltd.